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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,851	12/22/2003	Jean-Marie Tran	871.0118.U1(US)	9087
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EXAMINER				
WILLIAMS, LAWRENCE B				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/743,851

Applicant(s)

TRAN, JEAN-MARIE

Examiner

LAWRENCE B. WILLIAMS

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-14, 16-23 and 26-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 2, 4-14, 16-23, 31, 33-38, 40 and 41 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 32, 39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Shan (US 2004/0223540 A1).

(1) Regarding claim 1, Shan discloses a method comprising inputting a code division multiple access signal (Shan discloses the method and apparatus of the invention may be used in direct sequence spread spectrum (DSSS) communication systems) received through a radio channel to a searcher (Shan discloses a Rake receiver may incorporate the teaching of the invention (pg. 2, paragraph [0016]). Thus a searcher would be inherent.); and processing the received signal in the searcher to obtain a multi-path profile of the radio channel (pg. 5, paragraph [0050] discloses estimation of the multipath channel including information such as time offset, magnitudes which represent a multipath profile of the channel), where processing comprises at least partially removing an effect of at least a transmit filter or a receive filter on the multi-path profile (pg. 5, paragraph [0052]), where at least partially removing comprises passing the received code division multiple access signal through a filter (Fig. 5, Inverse filter, 36)

selected to have a characteristic that approximates an inverted amplitude or power response of the at least one of the transmit filter or the receive filter. (pg. 5, paragraph [0052-0053]; Shan discloses the inverse filter, 36 operating to substantially cancel the effects of the pulse creation operation in the transmitter/transmit filter; Shan discloses pulse creation operation as a filter (transmit filter) having a chip sequences of impulses as and input. Shan also discloses the inverse filter having a magnitude response (power response) of the transmit filter; pg. 5, paragraph [0056]).

(2) Regarding claim 2, Shan also discloses a method as claimed in claim 1, further comprising outputting the multi-path profile to a controller for use in making demodulator finger assignments (pg. 2, paragraph [0016]).

(3) Regarding claim 32, Shan discloses an apparatus comprising a searcher (Shan discloses a Rake receiver may incorporate the teaching of the invention (pg. 2, paragraph [0016]). Thus a searcher would be inherent.) and a filter (Fig. 5, Inverse Filter, element 36) configured to input a code division multiple access signal received through a radio channel to the searcher (Shan discloses the method and apparatus of the invention may be used in direct sequence spread spectrum (DSSS) communication systems); and process the received signal in the searcher to generate output data for a finger assignment algorithm that represents a multi-path profile of the radio channel (pg. 5, paragraph [0050] discloses estimation of the multipath channel including information such as time offset, magnitudes which represent a multipath profile of the channel), where processing comprises passing the received code division multiple access signal through a filter selected to have a filter characteristic that approximates an inverted response (Fig. 5 discloses Inverse Filter, 36) of at least one of a base station transmit filter or at

least one mobile station receive filter so as to reduce an occurrence of multi-path sidelobes in the output data (pg. 5, paragraph [0052-0053]; Shan discloses the inverse filter operating to substantially cancel the effects of the pulse creation operation in the transmitter/transmit filter; Shan discloses pulse creation operation describes as a filter (transmit filter) having a chip sequences of impulses as and input).

Claim Rejections - 35 USC § 103

3. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shan (US Patent 2004/0223540 A1) as applied to claim 32.

Claim 39 discloses the method of claim 32 executed by a processor incorporating a memory storing a program. As noted above, Shan discloses all limitations of claim 32. Shan does not explicitly teach a memory storing a program that when executed by a processor results in actions comprising the method of claim 32. However, software implementations of hardware methods are well known in the art. One of ordinary skill in the art could have readily implemented the method of Shan by processor and would have been motivated to do so to achieve the durability and ease of modification offered by a processor based implementation.

Allowable Subject Matter

4. Claims 4-14, 16-23, 26-31, 33-38 are allowed.

5. Claims 40-41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: The instant application discloses a method and apparatus in a coded division multiple access environment. A search of prior art records has failed to teach or suggest, alone or in combination:

“a method to receive a code division multiple access (CDMA) signal from a radio channel, comprising:

inputting a code division multiple access signal received through a radio channel to a searcher; and

processing the received signal in the searcher to obtain a multi-path profile of the radio channel, where processing comprises at least partially removing an effect of at least one of a transmit filter or a receive filter on the multi-path profile, wherein said at least partially removing comprises passing the received code division multiple access signal through a *processing unit that uses a least squares criterion to derive the radio channel multi-path profile \mathbf{x} from a searcher profile \mathbf{y} , where $\mathbf{y} = \mathbf{F} \cdot \mathbf{x} + \mathbf{v}$, where \mathbf{v} is a noise vector and \mathbf{F} is a transmit/receive matrix*” as disclosed in claim 4.

“ an apparatus comprising:

a receiver front end for receiving a CDMA signal from the radio channel; said receiver front end comprising at least one receiver filter; and

a deconvolution searcher block having an input coupled to an output of the receiver front end for inputting a received signal and an output for outputting a digital representation of a radio channel multi-path profile to a control function, said deconvolution searcher block comprising a unit configured to process the received signal to at least partially remove an effect of at least said receiver filter on the multi-path profile, *the unit comprising a filter having a filter characteristic that approximates an inverted amplitude response of at least said receiver filter*” as disclosed in claim 10.

“an apparatus, comprising:

a receiver front end for receiving a CDMA signal from the radio channel; said receiver front end comprising at least one receiver filter; and

a deconvolution searcher block having an input coupled to an output of the receiver front end for inputting a received signal and an output for outputting a digital representation of a radio channel multi-path profile to a control function, said deconvolution searcher block comprising a unit configured to process the received signal to *at least partially remove an effect of at least said receiver filter on the multi-path profile, where said unit is further configured to at least partially remove an effect of a transmitter filter on the multi-path profile and to use at least squares criterion to derive the radio channel multi-path profile x from a searcher profile y , where $y = F \bullet x + v$, where v is a noise vector and F is a transmit/receive matrix*” as disclosed in claim 17.

“a mobile station, comprising;

a receiver comprising a receiver front end configured to receive a code division multiple access signal from the radio channel, said receiver front end comprising at least one receiver filter;

a searcher having an input coupled to an output of the receiver front end for inputting a received signal and having an output for outputting a digital representation of a radio channel multi-path profile to said control function; and

a unit configured to at least partially remove, at least partially via deconvolution, an effect of at least said receiver filter on the multi-path profile, *where said unit comprises a filter having a filter characteristic that approximates an inverted response of at least said receiver filter*” as disclosed in claim 21.

“a mobile station, comprising:

a receiver comprising a receiver front end configured to receive a code division multiple access from a radio channel, said receiver front end comprising at least one receiver filter;

a searcher having an input coupled to an output of the receiver front end for inputting a received signal and having an output for outputting a digital representation of a radio channel multi-path profile to said control function; and

a unit configured to at least partially remove, at least partially via deconvolution, an effect *of at least said receiver filter on the multi-path profile*, said unit comprises a processor that is configured to use a least squares criterion to derive the radio channel multi-path profile x

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from a searcher profile y , where $y = F \bullet x + v$, where v is a noise vector and F is a transmit/receive matrix” as disclosed in claim 26.

“an apparatus comprising processor unit, and a receiver and a searcher configured to: receive as a received signal a code division multiple access through a radio channel to the searcher; and process the received signal in the searcher to generate output data for the finger assignment algorithm that represents a multi-path profile of the radio channel, where processing comprises passing the received code division multiple access signal through a processor unit that operates in accordance with a least squares criterion to derive the radio channel multi-path profile x from a searcher profile y , where $y = F \bullet x + v$, where v is a noise vector and F is a transmit/receive matrix, so as to reduce an occurrence of multi-path sidelobes in the output data” as disclosed in claim 33.

“circuitry, comprising: a searcher comprising an input configured to receive a code division multiple access signal from a receiver front end, the searcher further comprising an output configured to output a digital representation of a radio channel multi-path profile of the received code division multiple access signal, said searcher comprising a deconvolution processing block configured to process the received code division multiple access signal receiver to at least partially remove an effect of at least a receiver filter in the receiver front end on the multi-path profile, the deconvolution

processing block comprising a filter having a filter characteristic that approximates an inverted amplitude response of at least said receiver filter" as disclosed in claim 34.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ghayour Mohammad can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tsfaldet Bocure/
Primary Examiner, Art Unit 2611

lbw
November 27, 2009